THESIS/REPORTS
ERSKINE, I.

REPORT FOR INTERMOUNTAIN REGION AVIATION AND FIRE MANAGEMENT ON THE LEVEL II FIRE MANAGEMENT ANALYSIS VALIDATION

Region 4
May 16, 1983

REPORT FOR INTERMOUNTAIN REGION AVIATION AND FIRE MANAGEMENT ON THE LEVEL II FIRE MANAGEMENT ANALYSIS VALIDATION

Region 4
May 16, 1983

Prepared By: Ivan Erskine
Fire Management
Fishlake National Forest
Richfield, Utah 84701
801-896-4491
584-8292

TABLE OF CONTENTS

	Page
Objectives	1
A. WORKSHEET 1: Initial Action Assessment FMAZ and Representative Fire	1
B. WORKSHEET 2: Fire Management Resources and Costs by Option Identifier	2
C. WORKSHEET 3: Initial Action Assessment Suppression Forces	4
D. WORKSHEET 3a: Suppression Cost Worksheet - Fires Contained by IAA	7
E. Calibration	8
F. Fire Effects and Net Value Change	11
G. Cost + NVC - Budget Curve	12
H. Summary Statement	12

LEVEL II FIRE MANAGEMENT ANALYSIS VALIDATION
REGION 4

May 16, 1983

Following are the objectives used on a Regional detail to validate each Forest's Level II Fire Analysis in the Intermountain Region.

1. Validate that each Forest's Level II Fire Management Analysis has been completed to National standards contained in the Fire Management Analysis and Planning Handbook (FSH 5109.19).

2. Identify data or process problems and either 1) correct at time of review if possible or 2) document and identify as problem area to correct in future to ensure Regional standardization.

(It soon became apparent that, due to time constraints, only very minor problems could be corrected during the review.)

3. Collect as a minimum from each Forest for R.O. reference material, worksheets 11, 12, and 17 and curve for cost plus net value change over FFP budgets.

(There were too many WS 11 to collect from all Forests. Whenever available WS-12 and 13 were collected or the Forest's equivalent documentation. Work sheets 17 and the cost + net value change over FFP budget options curves were collected from all the Forests.)

4. Compile list from each Forest of problem statements or suggestions pertaining to the fire analysis process that the R.O. can work on for formulation of future fire analysis improvements.

A check list was developed to assist in the review. This report will summarize the information and data compiled from each Forest. Out of the 16 Forests in the Intermountain Region only one has not yet completed the Level II Fire Analysis as of the date of this report. That analysis should be completed this spring or early summer, at which time the missing data will be added to this report.

CHECK LIST

A. WORKSHEET 1: Initial Action Assessment FMAZ and Representative Fire Worksheet

1. Is the maximum contained fire size the IAA Program will model realistic?

   Four Forests felt the maximum contained fire size modeled in their IAA Programs were too large. These feelings were attained after they worked through the analysis process and gained a better understanding of how it works.

TABLE 1

Forest	IAA Maximum Contained Fire Size	Is it Realistic?	What would be more Realistic?
Boise	100 AC	Yes	
Payette	150 AC 300 AC	Yes	
Toiyabe	300 AC	No	FMAZ B - 150-175 AC FMAZ G - 100 AC
Wasatch	300 AC	Yes	
Challis	300 AC	Yes	
Sawtooth	300 AC	Yes	
Salmon	300 AC	No	50-100 AC
Dixie	300 AC	Yes	
Ashley	50 AC	Yes	
Uinta	100 AC	Yes	
Humboldt	300 AC	No	100-150 AC
Fishlake	300 AC	No	FMAZ Sage - 100 AC FMAZ P-J - 50 AC
Manti-La Sal	100 AC	Yes	
Caribou	300 AC	Yes Within ± 50 AC	
Targhee Bridger-Teton	100 AC	Yes	

B. WORKSHEET 2: Fire Management Resources and Costs by Option Identifier

1. Does the total FFP budget dollar allocated include GA and other assessments?

TABLE 2

Forest	FFP Includes GA and Other Assessments?	FFP Includes GA only?	FY Year Used in Analysis on WS-2
Boise	Yes		1981
Payette	No		1978 - adjusted to FY 80
Toiyabe	Yes		1980
Wasatch	Yes		1980
Challis	Yes		1980
Sawtooth		Yes	1980
Salmon	Yes		1980
Dixie	Yes		1980
Ashley	Yes		1980
Uinta	No		1980
Humboldt	Yes		1980
Fishlake	Yes		1980
Manti-LaSal		Yes	1980
Caribou		Yes	1980
Targhee Bridger-Teton	Yes		1980

2. Does each individual unit on the Forest include GA and other assessments on WS-2?

TABLE 3

Forest		
Boise	Yes	
Payette	No	GA and other assessments
Toiyabe	No	
Wasatch	Yes	
Challis	No	
Sawtooth	No	
Salmon	No	
Dixie	No	
Ashley	Yes	
Uinta	No	GA and other assessments
Humboldt	No	
Fishlake	Yes	
Manti-LaSal		
Caribou	Yes	GA only
Targhee	Yes	
Bridger-Teton		

3. In what FFP function(s) were the increases and decreases located for initial attack forces?

TABLE 4

Forest	
Boise	113
Payette	113, 114
Toiyabe	111, 113, 115
Wasatch	113
Challis	113, 114
Sawtooth	111, 112, 113, 114 (115 function not included)
Salmon	113
Dixie	111, 112, 113
Ashley	113
Uinta	111, 113
Humboldt	113 (115 function not included)
Fishlake	111, 113
Manti-LaSal	112, 113
Caribou	111, 112, 113, 114, 115
Targhee	115 (Fuels analysis with IA resources constant)
Bridger-Teton	

4. Problems - Suggestions

Ashley:

Very difficult to locate old data on budget - should have better system for saving and retrieving data.

Standardized computer program to save data for future use.

Toiyabe:

Feel person(s) doing analysis should spend more time with Staff and District Rangers scrutinizing the possibilities for manpower and equipment mixtures due to different FFP budget options.

There was some inconsistency when it came to including GA or other assessments. In the future this will probably not be a problem. However, direction from the R.O. Aviation and Fire in conjunction with Budget and Finance would help make the FFP portion of the analysis more consistent.

Also, there was some confusion as to which functions should be included in the total FFP budget, namely 115. What is and is not included in the total FFP budget can be explained in an analysis narrative, but for comparison purposes the differences make it difficult.

Payette:

It is difficult to tie the budget options (Base, -20%, +20%, etc.) in with the Forest plan budget levels.

C. WORKSHEET 3: Initial Action Assessment Suppression Forces

1. Is the IA organization used to represent the current situation in the calibration run, the organization that was responsible for the 1970 decade fire history record?

All Forests felt this was true for the most part. However, it was evident that the fire suppression resources throughout the region were more numerous during the first half of the 1970 decade. With more controls being placed on FFF monies, the fire suppression resources began to shrink toward the latter part of the decade.

2. Is the IA organization sent to each representative fire reasonable in correlation to fire intensity levels?

On every Forest the answer to this question was yes. Most used actual dispatch logs to develop the most accurate response in correlation to fire intensity levels. Four Forests expressed concern about unrealistically long Initial Attack resource lists on WS-3. They felt that not that many resources would be used in an Initial Attack effort in a real fire on their Forests.

3. Production Rates:

a. Do they correlate to rates in Appendix A?

For the most part the production rates in all analyses follow Appendix A closely. However, there are some inconsistencies due to a lack of direction, espcially in unusual situations. I will address these later on in this section.

b. Do any of the low budget options cut into supervision and in turn reduce production rates?

Nine Forests identified low budget options that would begin to cut into supervisory positions. They are as follows.

TABLE 5

Forest	Budget Option
Boise	-40%
Toiyabe	-40%
Wasatch	-40%
Challis	-40%
Sawtooth	-30%
Salmon	-40%
Dixie	-30%
Fishlake	-40%
Caribou	-20%

Only four Forests (Boise, Ashley, Humboldt, and Caribou) actually ran the -40% budget option. None of them were exactly sure how much the production rates should be reduced due to the lower supervisory controls. Consequently none of them did. More direction would be helpful.

4. Were airtankers routinely used as IA forces in the 1970 decade? Helicopters?

TABLE 6

Forest	Airtankers routinely used?	Helicopters routinely used?
Boise	Yes	Yes
Payette	Yes	Yes
Toiyabe	Yes	Yes
Wasatch	Yes	Yes
Challis	Yes	Yes
Sawtooth	Yes	Yes
Salmon	Yes	Yes
Dixie	Yes	Yes (when available)
Ashley	Yes	Yes
Uinta	Yes	Yes
Humboldt	Yes	Yes (BLM)
Fishlake	Yes	No
Manti-LaSal	No	No
Caribou	Yes	Yes
Targhee	No	Yes
Bridger-Teton		

b. Were airtankers used with ground forces to get full benefit of production rates?

All the Forests use ground forces with airtankers to get full benefit of production rates. In reality however, several Forests (Boise, Payette, Challis) admit that in overload multiple start situations airtankers are used until either ground forces can arrive or there are some available to send.

5. Engines: Are engine production rates for actual use of the engine equipment or was the engine primarily used for transportation to fire for individuals?

Seven Forests (Payette, Toiyabe, Challis, Ashley, Uinta, Humboldt, Targhee) definitely felt the engine production rates used were accurate in all starts. Two Forests (Sawtooth, Salmon) listed engines, yet used production rates for individuals because they were transportation only. One Forest (Boise) combined engine and individual production rates because engine production rates were only applicable part of the time. Five Forests (Wasatch, Dixie, Fishlake, Manti-LaSal, Caribou) should have reduced the engine production rates slightly to reflect the percentage of fires when the engines were transporting individuals only.

6. Bulldozers:

a. Were bulldozers routinely used as IA forces in the 1970 decade?

Five Forests (Toiyabe, Sawtooth, Dixie, Humboldt, and Caribou) have at times in the past decade used dozers as an Initial Attack resource. In most cases however, dozers are used after fires escape. Six Forests (Wasatch and five above) used dozers in their analyses at higher fire intensity levels on certain representative fires.

b. Are there any dozers on Forest that are financed out of FFP?

During the early part of the 1970 decade the Sawtooth did have a FFP financed dozer. No Forest in the region now has a FFP financed dozer.

7. Local Cooperator Resources: Is the amount of assistance indicated on WS-3 realistic when considering periods when cooperator is taking suppression action within his jurisdiciton and is unable to provide full assistance?

Four Forests (Boise, Payette, Challis, Caribou) did not list any cooperator resources on WS-3. Only in extreme fire situations would the cooperators listed not be available.

8. Problems - Suggestions.

It was obvious that WS-3 is in need of more specific direction. Many Forests feel some production rates are too high (airtankers and engines). Many Forest realized that engine production rates should be reduced to include slower production rates for those times when they transported individuals only.

The region needs to deal with shared national resources such as smokejumpers, airtankers, helicopers, and IR crews. All Forests listing these resources on their WS-3 are assuming they are always available, and in reality they are not. This is especially true at higher fire intensity levels.

Forests should not over-inflate the amount of resources listed on the WS-3.

Many of these problems should be covered in more detail in the directions and then used on a zone basis between neighboring Forests to ensure consistency.

D. WORKSHEET 3a: Suppression Cost Worksheet - Fires Contained by IAA.

1. Was worksheet 3a used or were FFF dollars calculated another way?

The Targhee was the only Forest that used WS-3a. All the others computed FFF using information from 5100-29's and large fire reports.

Here are some samples of costs by size classes:

TABLE 7
Fire Size

Forest		A	B	C	D	E+
Challis:	FMAZ W	$ 970/Fire	$4980/Fire	$1600/Acre	$1300/Acre	$800/Acre
	FMAZ O	$ 970/Acre	$4980/Fire	$1200/Acre	$ 900/Acre	$600/Acre
Payette:	Other	$1600/Fire	$1600/Fire	$ 900/Acre	$ 600/Acre	$450/Acre
	Wilderness	$2400/Fire	$2400/Fire	$ 900/Acre	$ 600/Acre	$350/Acre
Toiyabe:		$ 300/Fire	$ 300/Fire	$ 300/Fire	$ 184/Acre	$184/Acre
Dixie:		$ 132/Fire	$ 132/Fire	$ 80/Acre	$ 50/Acre	$ 50/Acre
Fishlake		$ 220/Fire	$ 220/Fire	$ 115/Acre	$ 229/Acre	$ 93/Acre
Manti-LaSal		$ 344/Fire	$ 344/Fire	$ 99/Acre	$ 99/Acre	$ 99/Acre
Boise:	FMAZ 1&2	$1800/Fire	$1800/Fire	$3500/Acre	$1000/Acre	$500/Acre
	FMAZ 3	$2000/Fire	$2000/Fire	$4000/Acre	$2000/Acre	$1000/Acre
Salmon:	FMAZ M	$2000/Fire	$2000/Fire	$ 500/Acre	$ 500/Acre	$ 300/Acre
	FMAZ R	$2000/Fire	$2000/Fire	$1200/Acre	$ 500/Acre	$ 200/Acre
Salmon:	Non-road	$2400/Fire	$2400/Fire	$ 900/Acre	$ 600/Acre	$ 350/Acre
	Roaded	$ 200/Fire	$2000/Fire	$ 900/Acre	$ 600/Acre	$ 350/Acre
Humboldt		$ 76/Acre	$ 76/Acre	$ 76/Acre	$ 96/Acre	$ 96/Acre
		$ 1156/fire	$ 1810/fire	$ 1085/acre	$ 617/acre	$ 361/acre

2. Problems - Suggestions.

Several Forests had difficulty retrieving data they felt was representative and/or accurate. Also, it was felt that some regional standards should be established for costs by geographical locations to ensure standardization.

E. Calibration

1. Document tolerances of historic acres and number of fires with IAA printout for each FMAZ.

The desirable tolerances are as follows:

	Average Annual
Total Acres Burned	± 2%
Total Number of Fires	± 0%
Acres Burned by Size Class	± 5%
Number of Fires by Size Class	± 2%

The following table displays the percent tolerances calibrated by each Forest between the base budget option IAA model and the historical fire data.

TABLE 8

Forest	FMAZ	Number of Fires or Acres	Percent Tolerance A-B	Percent Tolerance C	Percent Tolerance D	Percent Tolerance E+	Percent Tolerance Total
Boise	1	Number	0%	+ 6%		-20%	0%
	1	Acres	0%	- 1%		+ 2%	+ 2%
	2	Number	0%	+ 2%		-10%	0%
	2	Acres	- 2%	0%		0%	0%
	3	Number	0%	- 2%		0%	0%
	3	Acres	+ 5%	+ 50%		0%	+ 5%
Payette	1	Number	0%	0%		0%	0%
	1	Acres	+ 66%	- 26%		0%	+ 1%
	2	Number	- 3%	+ 80%			0%
	2	Acres		+ 16%			+132%
	3	Number	0%	0%		0%	0%
	3	Acres	+108%	+ 6%		- 2%	+ 5%
	4	Number	0%				0%
	4	Acres	+ 29%				+ 29%
	5	Number	0%	- 12%			0%
	5	Acres	+ 58%	- 2%			+ 12%
	6	Number	0%		0%		0%
	6	Acres	+123%		0%		+ 28%
Toiyabe	B	Number	0%	0%	0%	0%	0%
	B	Acres	+ 79%	- 4%	- 20%	- 5%	- 6%
	G	Number	0%	- 2%	0%	0%	0%
	G	Acres	+130%	- 18%	- 1%	-21%	- 11%
Wasatch	H	Number	0%	+ 1%		+10%	0%
	H	Acres	- 12%	+ 10%		+10%	+ 13%
	F	Number	+ 1%	- 1%	- 4%	0%	0%
	F	Acres	0%	+ 33%	+ 15%	- 2%	+ 10%
Challis	O	Number	0%	+ 13%		0%	0%
	O	Acres	+ 1%	- 15%		0%	- 2%
	W	Number	0%	+ 3%	- 20%	0%	0%
	W	Acres	- 2%	+ 2%	+ 15%	- 7%	- 5%
Sawtooth	South	Number	- 3%	+ 22%	- 10%	+16%	0%
	South	Acres	+ 4%	+ 1%	+ 6%	0%	0%
	North	Number	- 6%	+107%	+140%		0%
	North	Acres	- 22%	- 1%	+100%		+ 22%
	SNRA	Number	0%	+ 40%	+ 70%		0%
	SNRA	Acres	0%	+ 9%	+ 1%		+ 2%
Salmon	R	Number	- 13%	- 12%	+320%	+ 4%	0%
	R	Acres	0%	+ 13%	+113%	-18%	- 15%
	M	Number	0%	- 5%	0%	0%	0%
	M	Acres	0%	- 2%	- 8%	0%	- 1%
Dixie	Pine	Number	0%	+ 1%	0%	0%	0%
	Pine	Acres	- 5%	+ 3%	- 1%	+ 1%	+ 1%
	PJ	Number	- 2%	+ 43%	+ 10%		0%
	PJ	Acres	+ 24%	+ 7%	0%		+ 6%

TABLE 8 (CONT'D)

Forest	FMAZ	Number of Fires or Acres	Percent Tolerance A-B	Percent Tolerance C	Percent Tolerance D	Percent Tolerance E+	Percent Tolerance Total
Ashley	1	Number	0%	+ 3%		0%	0%
	1	Acres	+ 28%	- 2%		0%	+ 1%
Uinta	1	Number	0%	0%	0%	+ 66%	0%
	1	Acres	- 2%	0%	- 37%	+ 4%	0%
	2	Number	0%	+ 6%			0%
	2	Acres	- 11%	+ 6%			+ 2%
Humboldt	1	Number	0%	- 1%	+ 1%	- 2%	0%
	1	Acres	- 38%	0%	+ 4%	- 2%	- 2%
Fishlake	PJ	Number	0%	0%			0%
	PJ	Acres	- 3%	0%			- 7%
	Sage	Number	+ 2%	- 1%	- 6%	+ 5%	0%
	Sage	Acres	+ 52%	+ 3%	+ 14%	+ 2%	+ 3%
Manti	L	Number	0%	0%		0%	0%
	L	Acres	- 3%	+ 1%		+ 8%	+ 3%
	M	Number	0%	0%		0%	0%
	M	Acres	+ 57%	- 8%		+ 7%	+ 8%
Caribou	1	Number	- 1%	+ 23%	- 28%	- 94%	0%
	1	Acres	- 1%	- 3%	+ 6%	0%	+ 1%

2. Problems - Suggestions

Nine out of the sixteen Intermountain Forests expressed concern about calibration. They felt that in the future training sessions with hands on experience calibrating the IAA models would be extremely useful and worthwhile. At the same training other areas of the analysis process could be covered to ensure standardization.

F. Fire Effects and Net Value Change

1. How were the physical effects and economic consequences prepared for each representative fire (i.e., were WS 6-10 used fully or was a short-cut used)?

Nine Forests essentially utilized WS 6-10, 11, 12 and 13. Some of them modified 11, 12, and 13 to fit their situation. The Boise utilized the new composite acre summary sheet developed by Dale Robinson to figure their NVC.

The remaining five Forests developed either one composite figure per acre for each representative fire or one for all their representative fires.

2. Are the resource damages or improvements compatible with the Fire Intensity Level (FIL) or does the FIL not make any difference in certain situations?

The Boise, Sawtooth, Humboldt, Salmon and Uinta showed that all resources were affected by different Fire Intensity Levels. Six Forests (Payette, Toiyabe, Challis, Dixie, Fishlake and Manti-LaSal) calculated timber as being the main resource affected by Fire Intensity Levels. The Wasatch, Ashley, Caribou, and Targhee showed no difference between Fire Intenstiy Levels.

3. Were the RPA values used?

All Forests left it up to each individual resource specialist on their Forest to obtain values from their respective Forest plans. Timber values were usually from current stumpage price listings.

4. Problems - Suggestions

It is difficult to compare Net Value Change (NVC) between Forests. Most values appeared reasonable relative to each other considering the resource values at risk. However, the Manti-La Sal and Challis did look too high and low respectively, compared to their neighboring Forests.

The Manti-LaSal at the Base budget option had a NVC of $84,000 on 148 acres. The Uinta to the north had a NVC of $104,000 on 366 acres and the Fishlake to the south had a NVC of $68,000 on 821 acres.

The Challis, also at the Base budget option, had a NVC of $4,000 on 441 acres. The Salmon to the north had a NVC of $113,000 on 1603 acres and the Sawtooth to the south had a NVC or $197,000 on 2,559 acres. The Challis in fact had the lowest NVC figures for the region.

G. Cost + NVC - Budget Curve

1. Copy of curve for each Forest:

Following are the cost + NVC budget curves with acres by budget option for all the Forests in the Region. Also included is a Regional cost + NVC budget curve with supporting data for Base -20%, +20%, and +40%. Six Forests (Toiyabe, Sawtooth, Ashley, Uinta, Humboldt and Caribou) had not calculated the +40% budget option. That data was obtained from extensions of their curves.

H. Summary Statement

In addition to the suggestions that have already been stated in this report, many Forests had one more for future use of the analysis process. Analysis zones should be designated throughout the Region. Each zone should consist of Forests in the same general geographical location with similar characteristics (suppression resources, natural resources, terrain, vegetation, etc.). Zone leaders would be trained by the Region so that all phases of the analysis process would be standardized. The Forests in each zone should work together throughout the analysis process under the direction of the zone leader. This would ensure standardization as well as provide help to those Forests that lack the expertise to complete the analysis process on their own.

LEVEL II FIRE ANALYSIS REGION 4 MAY 1983

+40%

Forest	1 FFP (M)	2 FFF (M)	3 NVC (M)	1+2+3 C + NVC (M)	Acres
Boise	1863	922	261	3046	831
Payette	1367	330	21	1718	94
Toiyabe *	1260			1320	500
Wasatch	760	44	57	861	143
Challis	553	272 +	1	824	146
Sawtooth *	594			1526	2470
Salmon	457	459	67	983	1326
Dixie	339	31	29	399	402
Ashley *	282			546	440
Uinta *	324			425	190
Humboldt *	234			915	3260
Fishlake	245	42	6	293	276
Manti	232	24	30	286	85
Caribou *	192			198	28
Subtotal	8702			13340	10191
Bridger-Teton					
Total					
Targhee					

* Data from extension of curves. Not actually obtained from analysis.

LEVEL II FIRE ANALYSIS REGION 4 MAY 1983

+20% IA Resources

Forest	1 FFP (M)	2 FFF (M)	3 NVC (M)	1+2+3 C + NVC (M)	Acres	NVC/Acre
Boise	1766	944	262	2972	838	313
Payette	1140	340	36	1516	136	265
Toiyabe	1080	117	20	1217	564	35
Wasatch	663	99	93	855	252	369
Challis	515	311	1	827	170	6
Sawtooth	509	761	183	1453	2500	73
Salmon	393	472	68	933	1356	50
Dixie	304	34	32	370	452	71
Ashley	261	208	33	502	453	73
Uinta	276	68	60	404	235	255
Humboldt	222	378	304	904	3834	79
Fishlake	220	73	23	316	701	33
Manti	212	26	36	274	107	336
Caribou	169	8	19	196	80	238
Subtotal	7730	3839	1170	12739	11678	
Bridger-Teton						
Total						
Targhee						

LEVEL II FIRE ANALYSIS REGION 4 MAY 1983

-20% IA Resources

Forest	1 FFP (M)	2 FFF (M)	3 NVC (M)	1+2+3 C + NVC (M)	Acres	NVC/Acre
Boise	1590	1273	401	3264	1188	338
Payette	847	704	154	1705	938	164
Toiyabe	720	453	361	1534	2234	155
Wasatch	469	159	345	973	829	416
Challis	440	523	5	968	559	9
Sawtooth	339	879	331	1549	3606	92
Salmon	262	622	135	1019	1742	77
Dixie	236	82	82	400	1354	61
Ashley	219	222	35	476	481	73
Uinta	186	131	305	622	862	354
Humboldt	199	383	304	886	3899	78
Fishlake	170	140	83	393	1269	65
Manti	172	33	116	321	209	555
Caribou	141	19	30	190	126	238
Subtotal .	5990	5623	2687	14300	19396	
Bridger-Teton						
Total						
Targhee						

LEVEL II FIRE ANALYSIS REGION 4 MAY 1983

Base

Forest	1 FFP (M)	2 FFF (M)		3 NVC (M)	1+2+3 C + NVC (M)	Acres	NVC/Acre
Boise	1676	1008	.60	268	2952	871	308
Payette	995	484	.49	98	1577	476	206
Toiyabe	900	148	.16	263	1311	743	354
Wasatch	566	106	.19	200	872	491	407
Challis	478	426	.89	4	908	441	9
Sawtooth	424	804	1.90	197	1425	2559	77
Salmon	327	555	1.70	113	995	1603	70
Dixie	270	59	.22	59	388	922	64
Ashley	240	224	.93	34	498	466	73
Uinta	228	83	.36	104	415	366	284
Humboldt	210	380	1.81	304	894	3854	79
Fishlake	195	102	.52	68	365	821	83
Manti	191	29	.15	84	304	148	568
Caribou	146	15	.10	38	199	157	242
Subtotal	6846	4423	.64	1834	13103	13918	
Bridger-Teton							
Total							
Targhee							

KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1240

Cost + Net Value Change

12,000 | 12,500 | 13,000 M | 13,500 M | 14,000 M | 14,500 M | 15,000 M | 15,500 M | 16,000 M

5,000 M
4,000
3,000
2,000
1,000
0

Total Cost

Acres Burned

-20%

Base

+20%

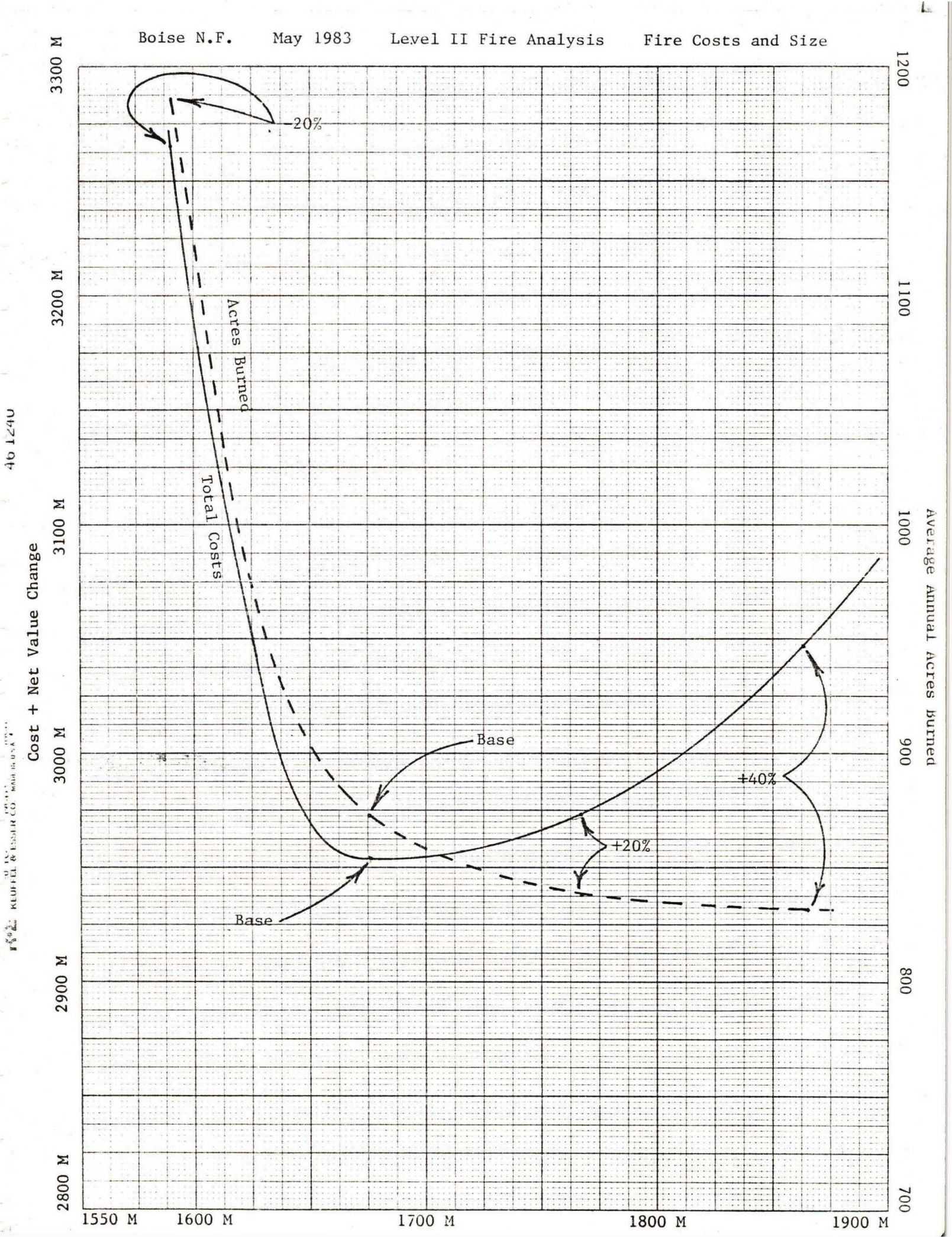
+ 40%

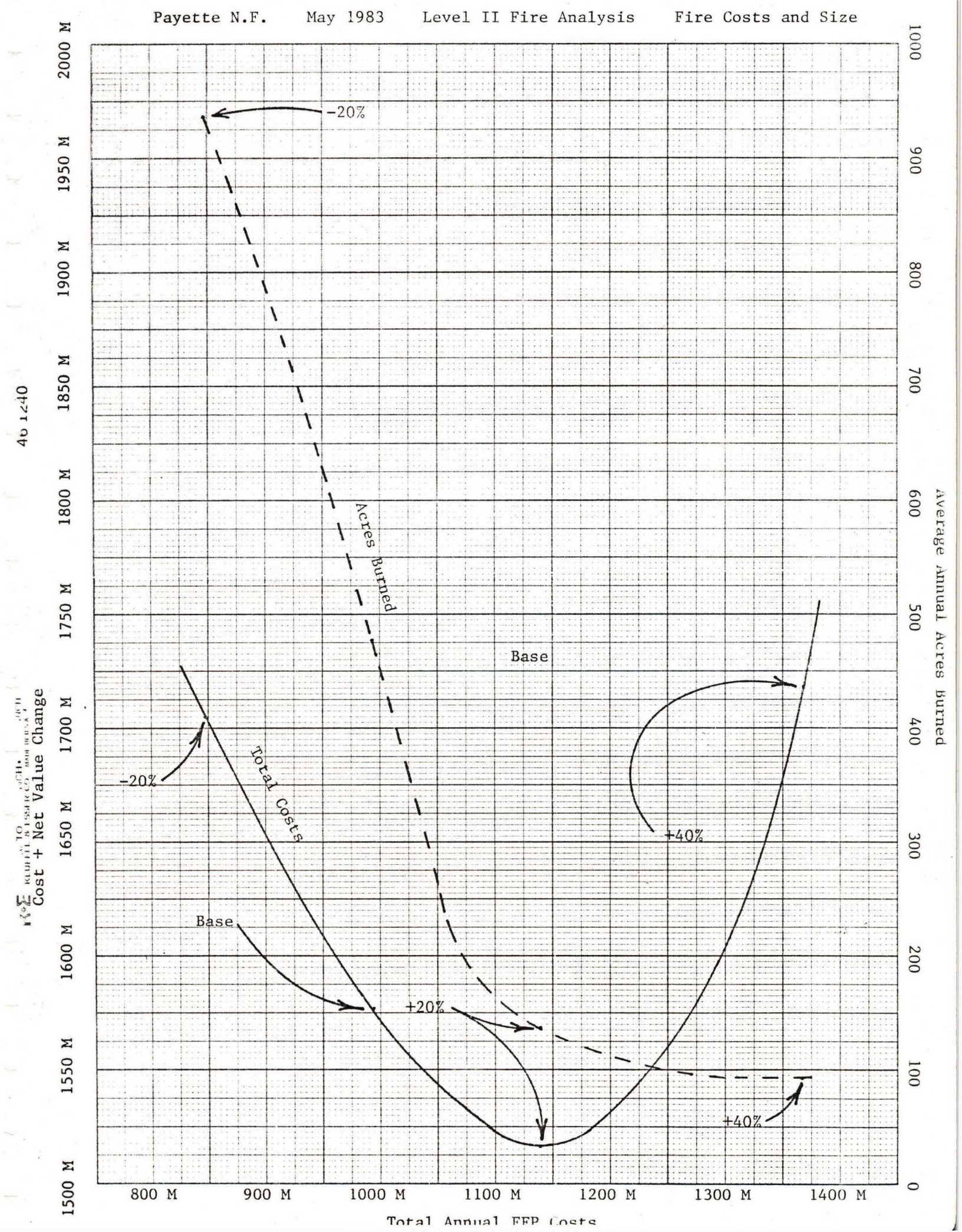
* Not Calculated by 43% of the Forests in the Region

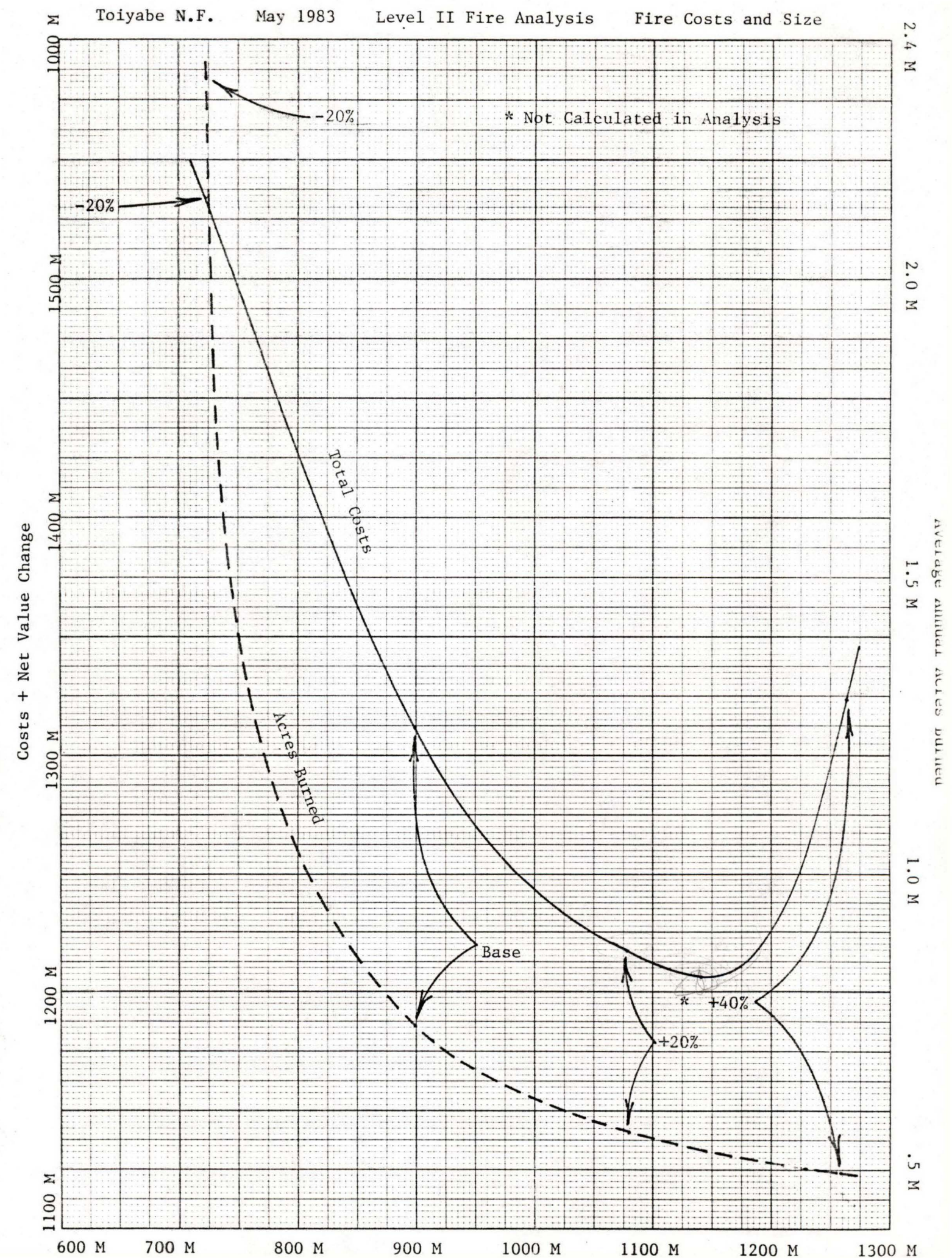
0 | 2 M | 4 M | 6 M | 8 M | 10 M | 12 M | 14 M | 16 M | 18 M | 20 M

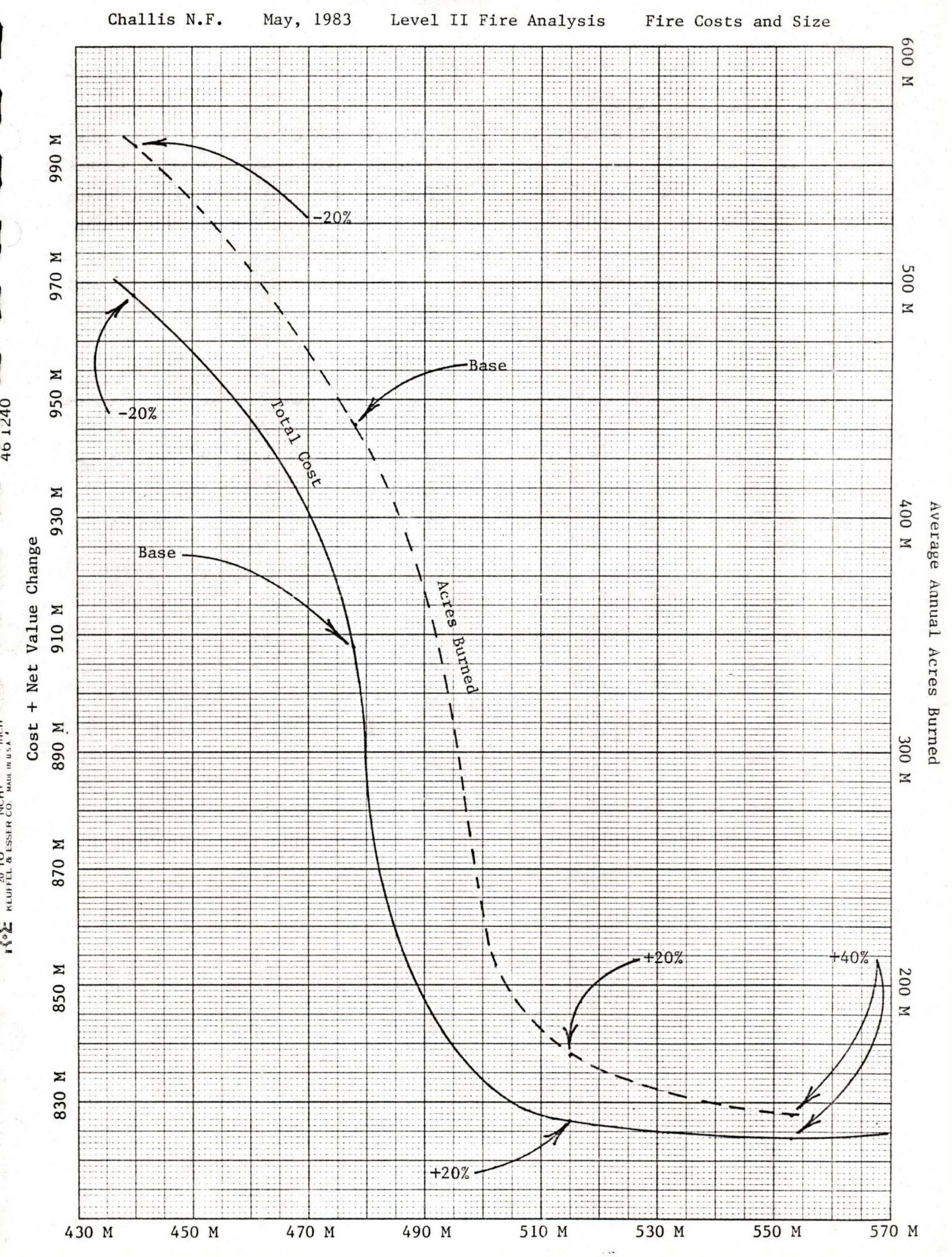
Average Annual Acres Burned

Intermountain Region R-4 May 1983 Level II Fire Analysis Fire Costs and Size

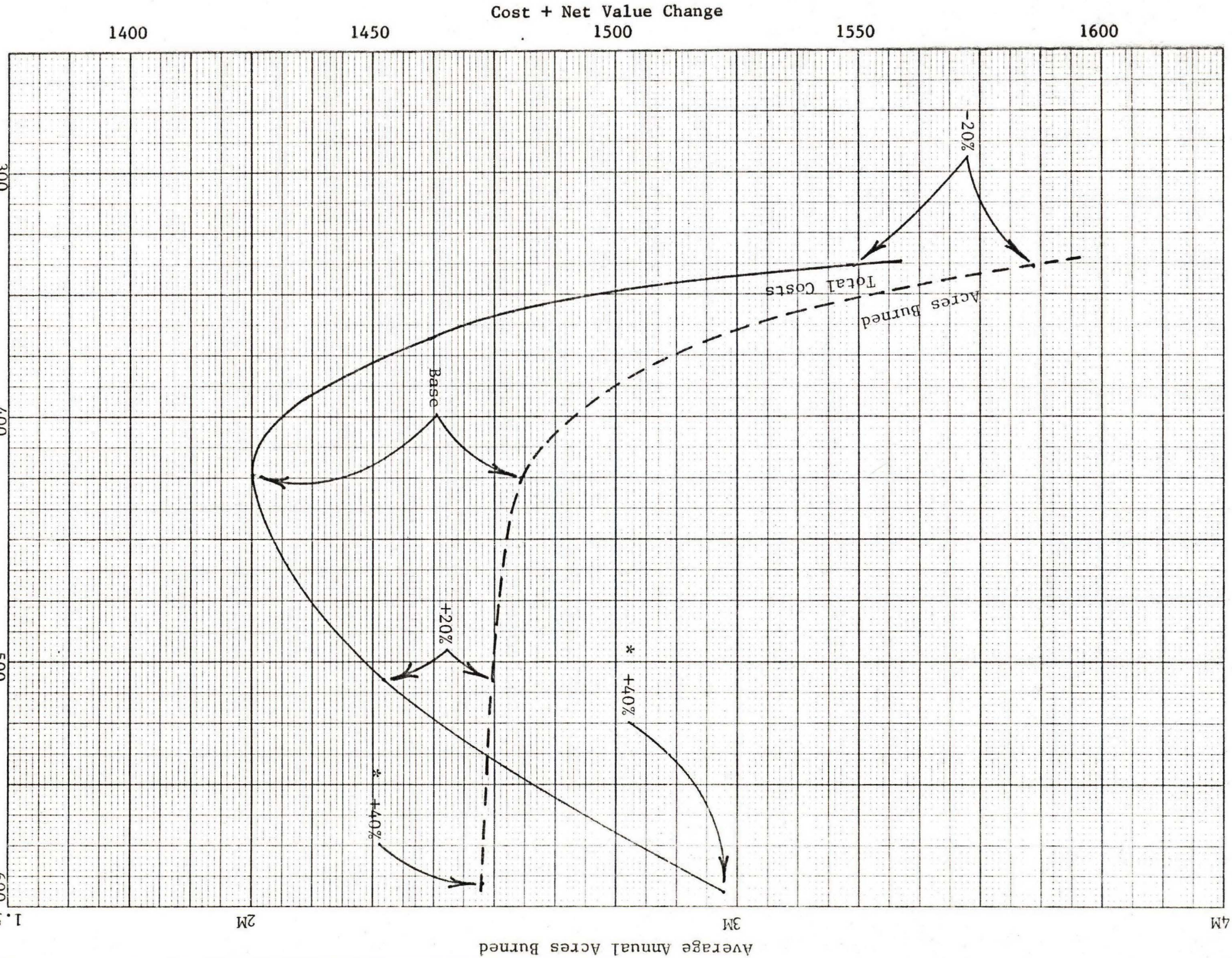

Boise N.F. May 1983 Level II Fire Analysis Fire Costs and Size
Cost + Net Value Change
Average Annual Acres Burned
3300 M
3200 M
3100 M
3000 M
2900 M
2800 M
1200
1100
1000
900
800
700
1550 M
1600 M
1700 M
1800 M
1900 M
-20%
Acres Burned
Total Costs
Base
+40%
+20%
Base

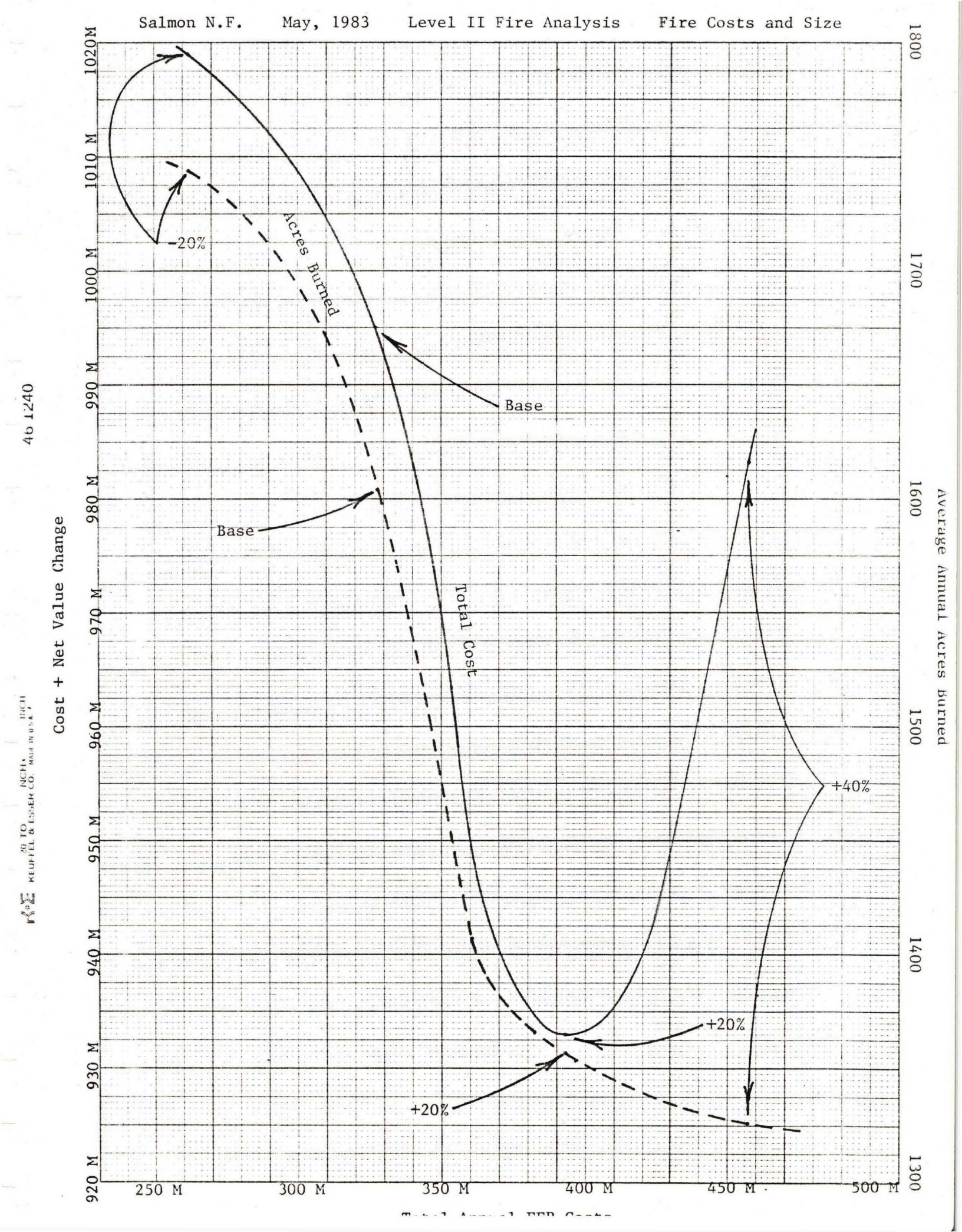

Payette N.F. May 1983 Level II Fire Analysis Fire Costs and Size
Cost + Net Value Change
Average Annual Acres Burned
Total Annual FFP Costs
2000 M
1950 M
1900 M
1850 M
1800 M
1750 M
1700 M
1650 M
1600 M
1550 M
1500 M
1000
900
800
700
600
500
400
300
200
100
0
800 M
900 M
1000 M
1100 M
1200 M
1300 M
1400 M
-20%
Acres Burned
Base
-20%
Total Costs
+40%
Base
+20%
+40%

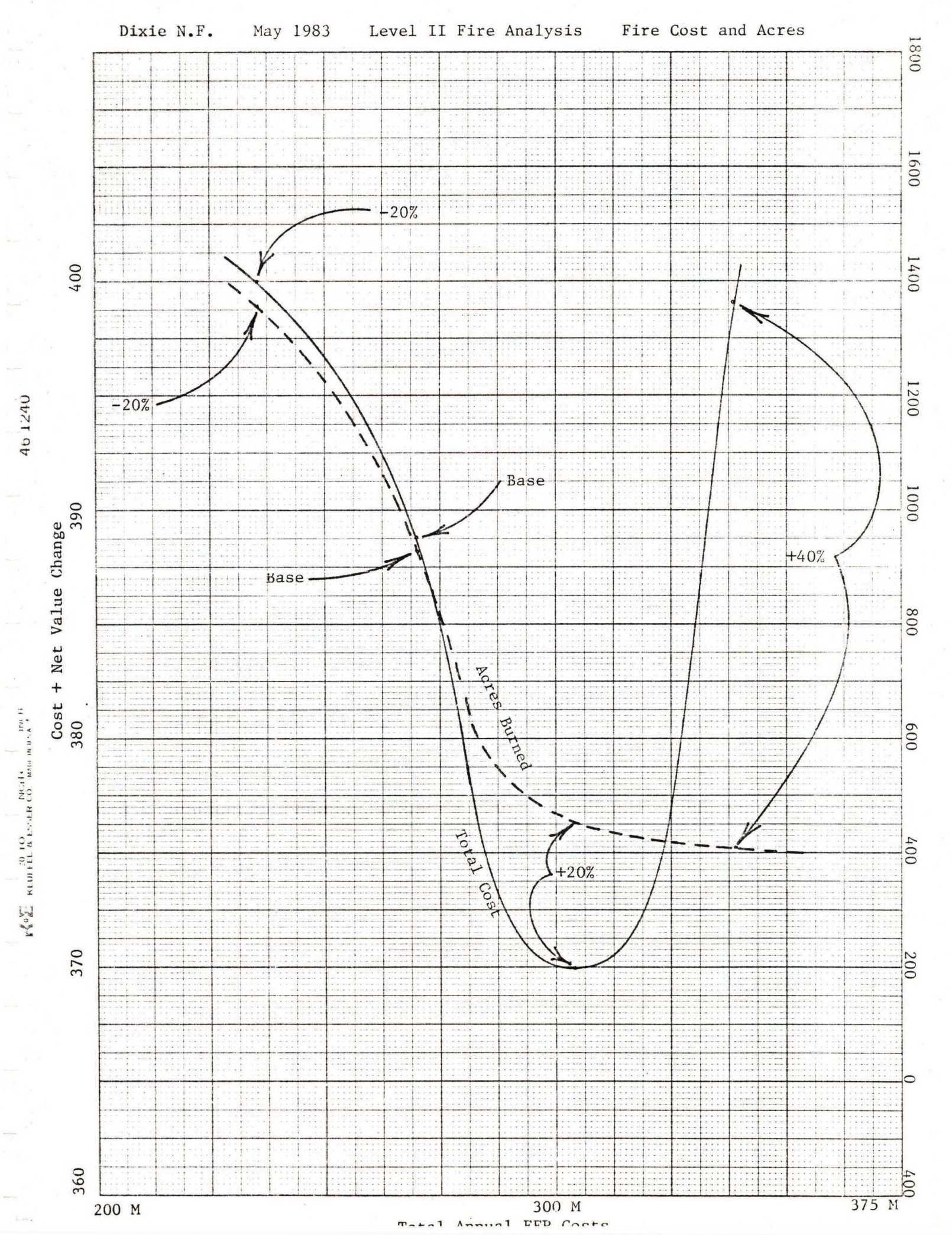

Toiyabe N.F. May 1983 Level II Fire Analysis Fire Costs and Size
* Not Calculated in Analysis
-20%
-20%
Total Costs
Acres Burned
Base
* +40%
+20%
Costs + Net Value Change
Average Annual Acres Burned
1000 M
1500 M
1400 M
1300 M
1200 M
1100 M
2.4 M
2.0 M
1.5 M
1.0 M
.5 M
600 M
700 M
800 M
900 M
1000 M
1100 M
1200 M
1300 M


Challis N.F. May, 1983 Level II Fire Analysis Fire Costs and Size
Cost + Net Value Change
Average Annual Acres Burned
990 M
970 M
950 M
930 M
910 M
890 M
870 M
850 M
830 M
600 M
500 M
400 M
300 M
200 M
-20%
Base
-20%
Total Cost
Base
Acres Burned
+20%
+40%
+20%
430 M
450 M
470 M
490 M
510 M
530 M
550 M
570 M

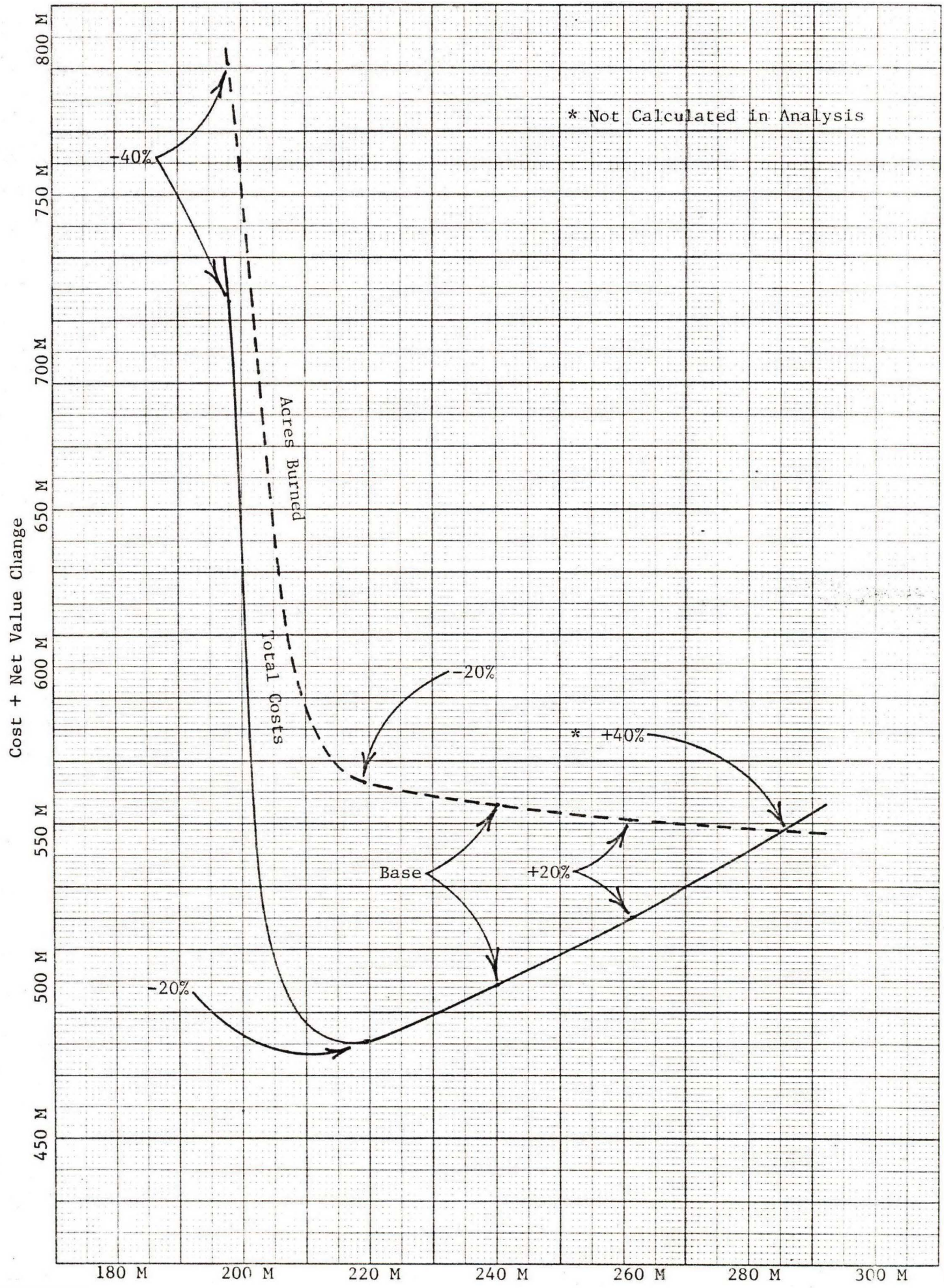
K&E 20 TO NCH 1 INCH KEUFFEL & ESSER CO. MADE IN U.S.A.

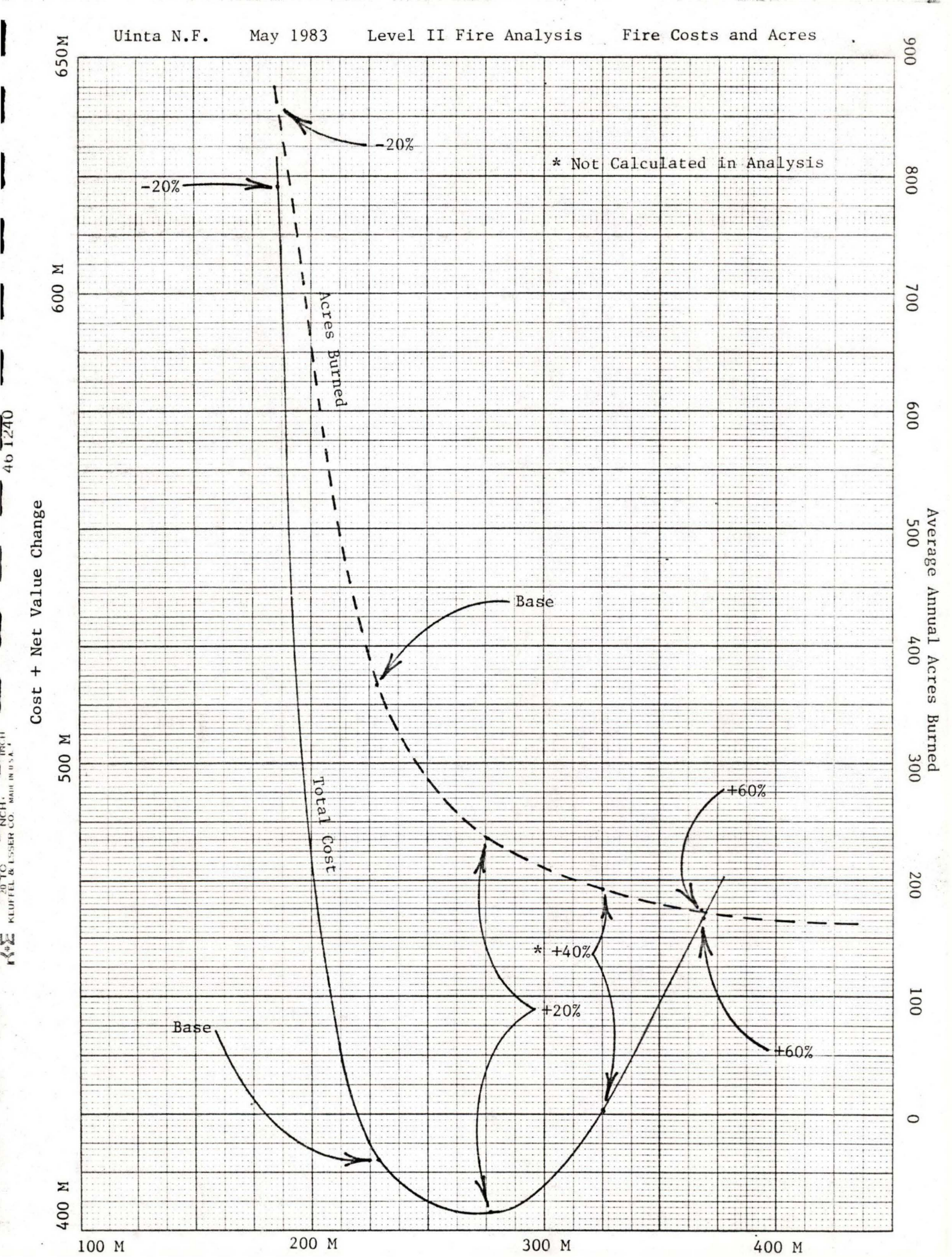


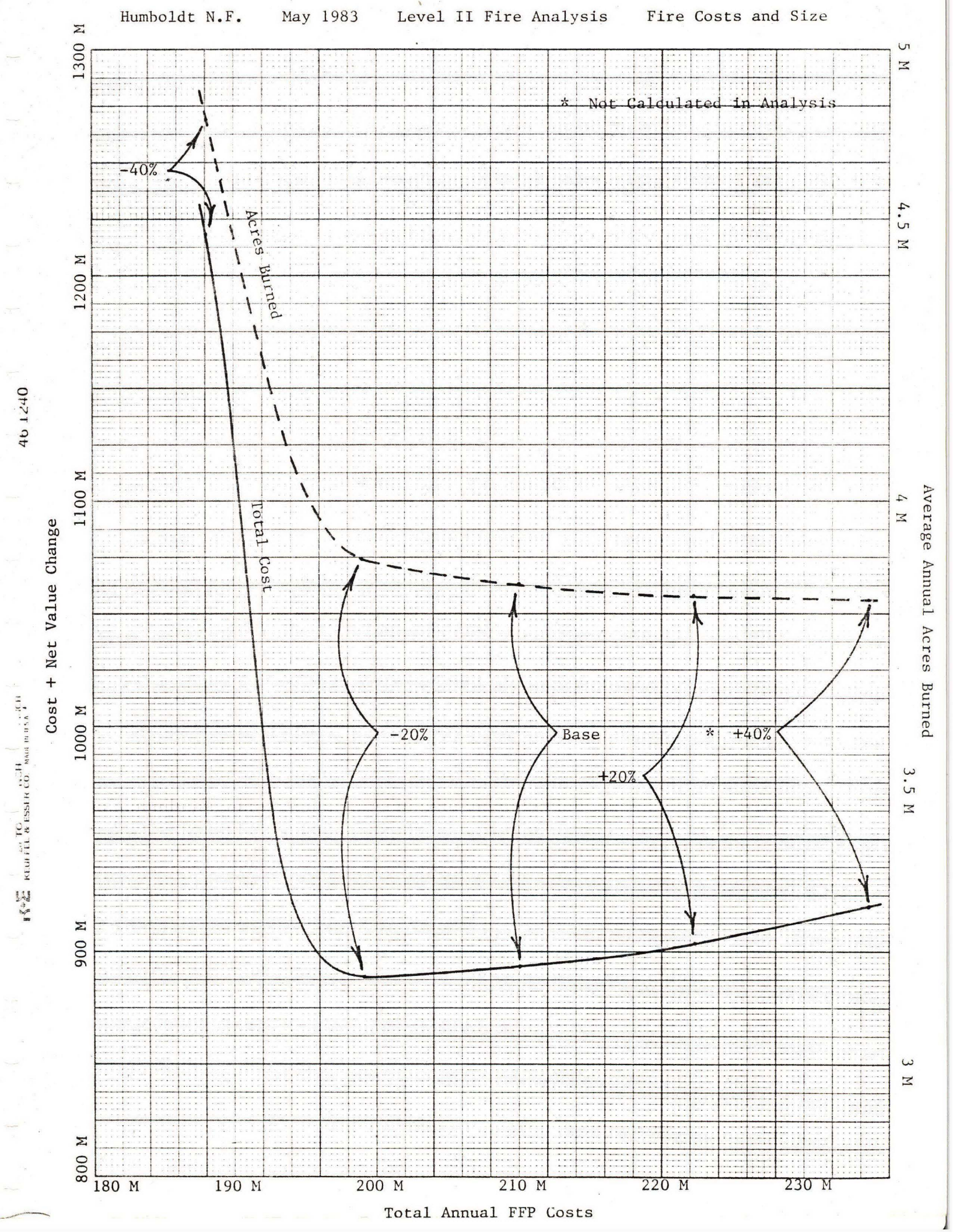

Salmon N.F. May, 1983 Level II Fire Analysis Fire Costs and Size
Cost + Net Value Change
Average Annual Acres Burned
Total Annual FFP Costs
1020M
1010 M
1000 M
990 M
980 M
970 M
960 M
950 M
940 M
930 M
920 M
1800
1700
1600
1500
1400
1300
250 M
300 M
350 M
400 M
450 M
500 M
-20%
Acres Burned
Base
Base
Total Cost
+40%
+20%
+20%
46 1240
KEUFFEL & ESSER CO. MADE IN U.S.A.


Dixie N.F. May 1983 Level II Fire Analysis Fire Cost and Acres
Cost + Net Value Change
Acres Burned
Total Cost
-20%
-20%
Base
Base
+40%
+20%
1800
1600
1400
1200
1000
800
600
400
200
0
400
400
390
380
370
360
200 M
300 M
375 M

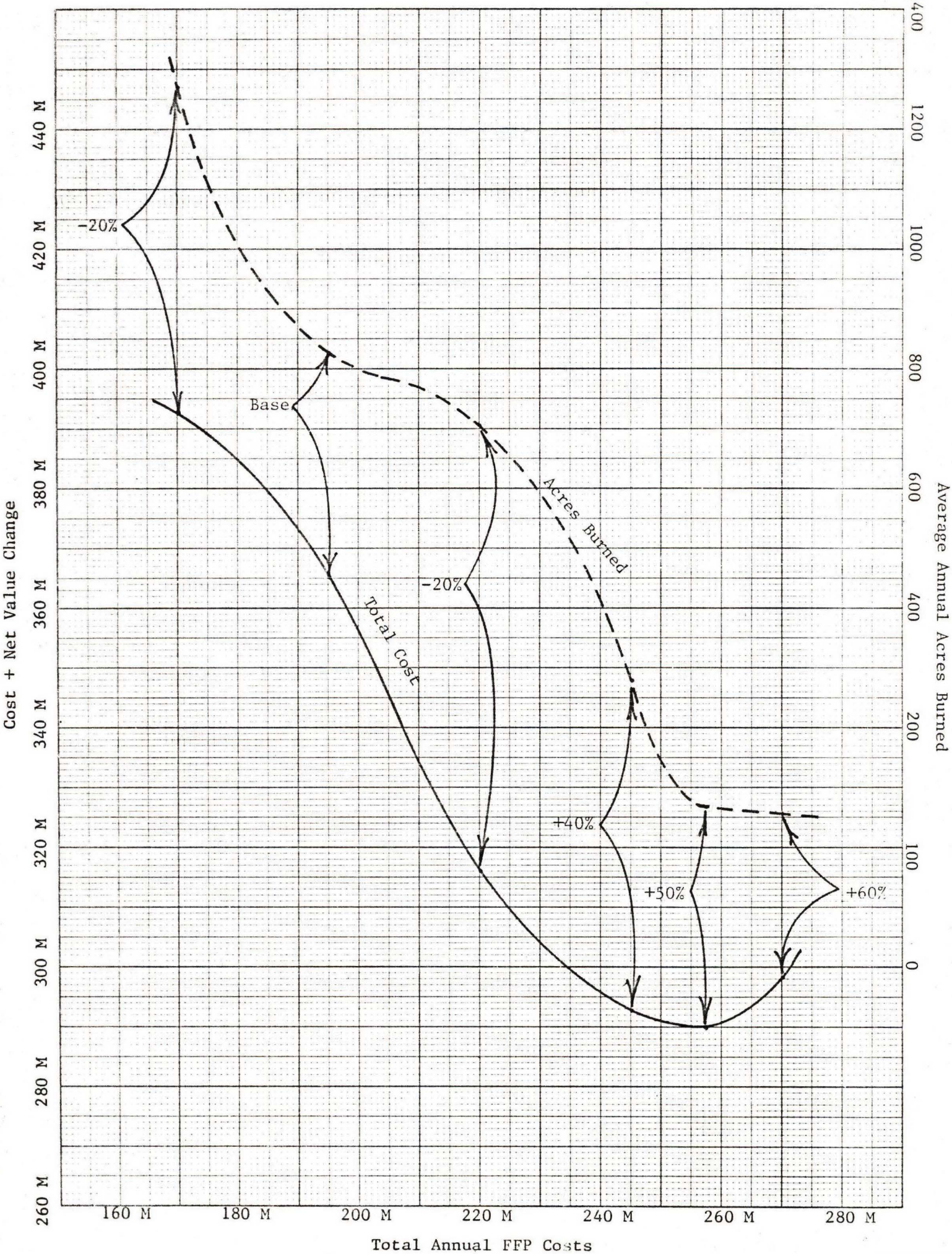
Ashley N.F. May 1983 Level II Fire Analysis Fire Costs and Size

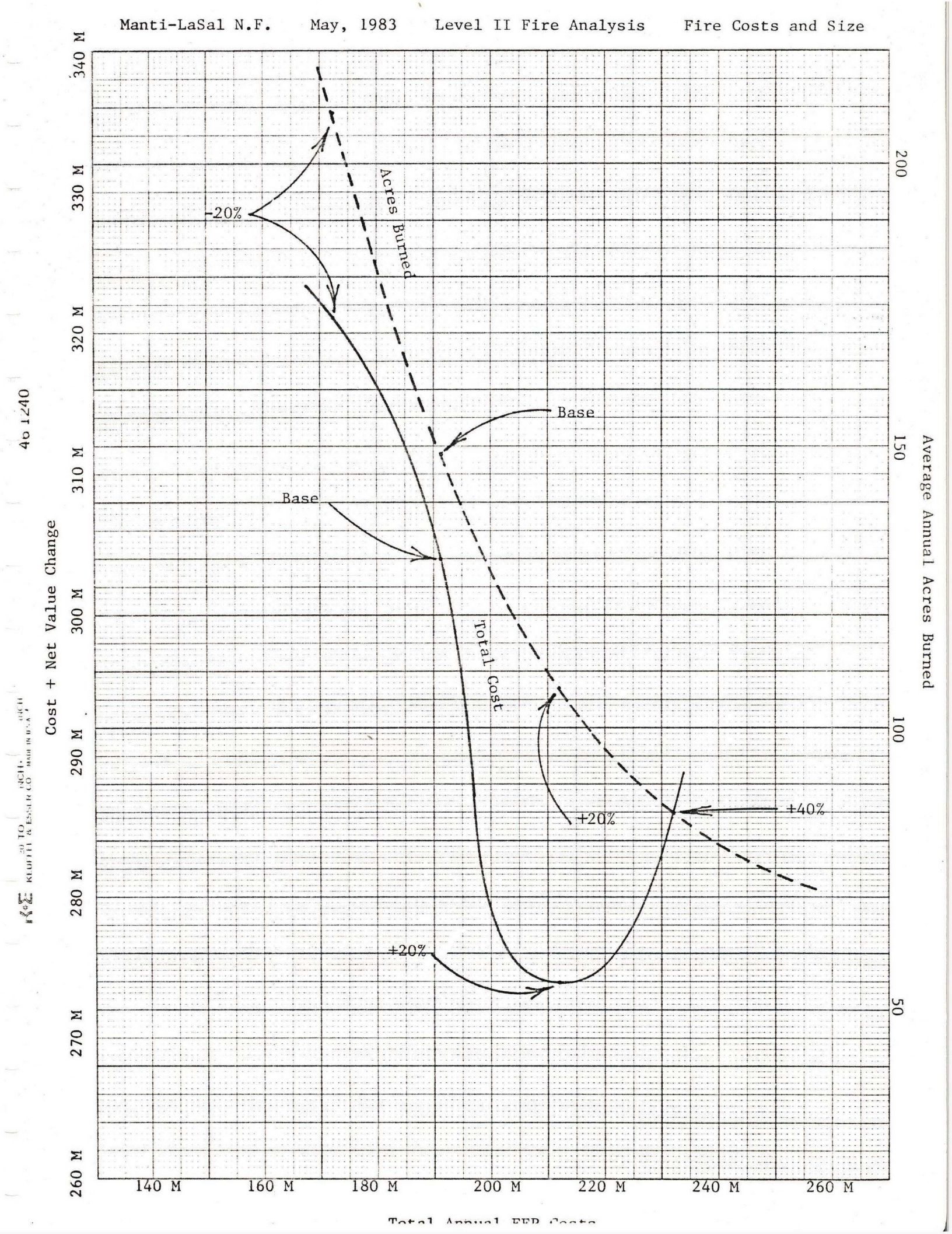


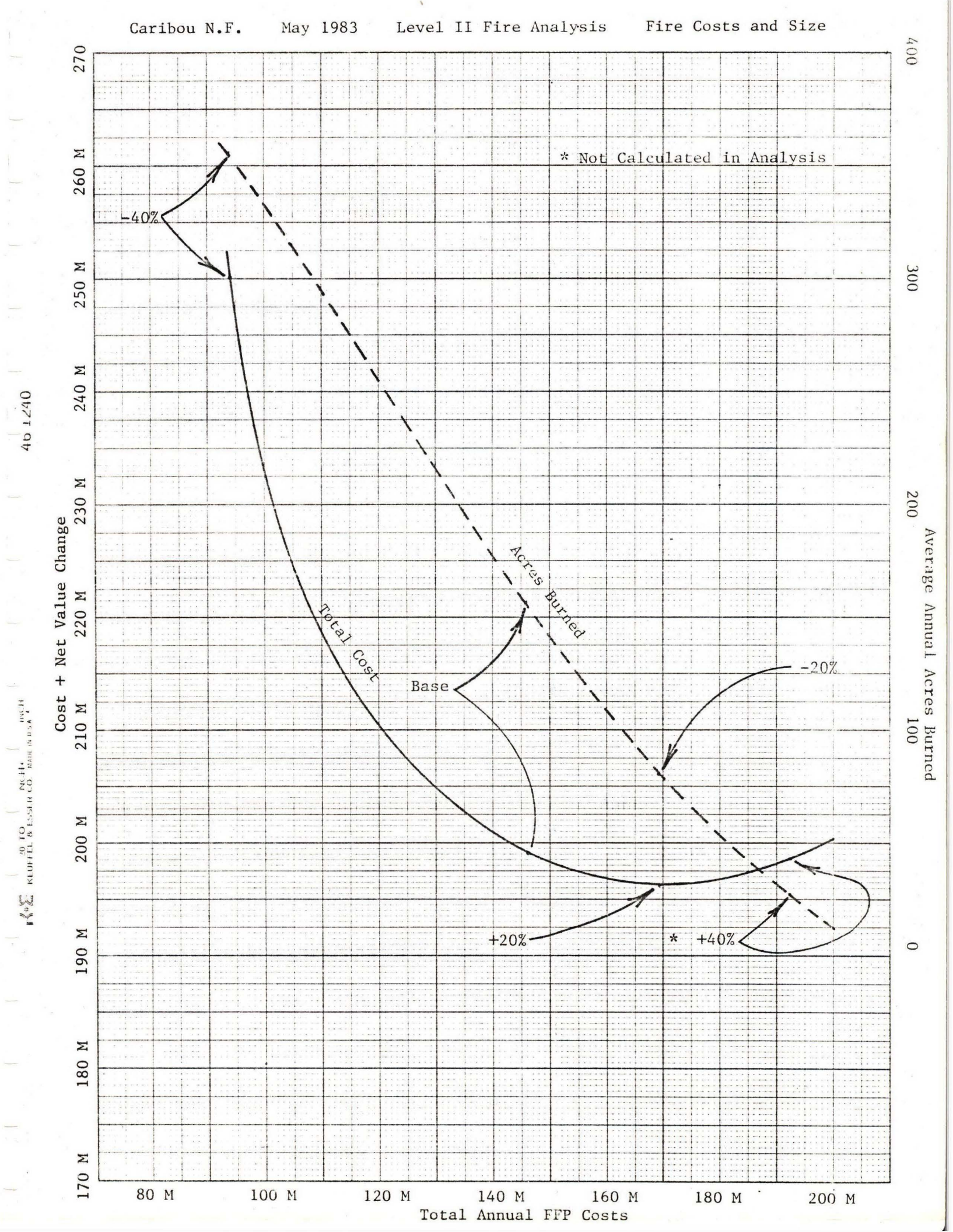

Uinta N.F. May 1983 Level II Fire Analysis Fire Costs and Acres
650M
600 M
500 M
400 M
Cost + Net Value Change
900
800
700
600
500
400
300
200
100
0
Average Annual Acres Burned
-20%
-20%
* Not Calculated in Analysis
Acres Burned
Base
Total Cost
+60%
* +40%
+20%
Base
+60%
100 M
200 M
300 M
400 M


Humboldt N.F. May 1983 Level II Fire Analysis Fire Costs and Size
* Not Calculated in Analysis
-40%
Acres Burned
Total Cost
-20%
Base
+20%
* +40%
1300 M
1200 M
1100 M
1000 M
900 M
800 M
5 M
4.5 M
4 M
3.5 M
3 M
180 M
190 M
200 M
210 M
220 M
230 M
Cost + Net Value Change
Average Annual Acres Burned
Total Annual FFP Costs

Fishlake N.F. May, 1983 Level II Fire Analysis Fire Costs and Size




Manti-LaSal N.F. May, 1983 Level II Fire Analysis Fire Costs and Size
340 M
330 M
320 M
310 M
300 M
290 M
280 M
270 M
260 M
Cost + Net Value Change
200
150
100
50
Average Annual Acres Burned
Acres Burned
-20%
Base
Base
Total Cost
+20%
+40%
+20%
140 M
160 M
180 M
200 M
220 M
240 M
260 M
Total Annual FFP Costs


Caribou N.F. May 1983 Level II Fire Analysis Fire Costs and Size
* Not Calculated in Analysis
-40%
Base
-20%
+20%
* +40%
Total Cost
Acres Burned
Cost + Net Value Change
Average Annual Acres Burned
Total Annual FFP Costs
270
260 M
250 M
240 M
230 M
220 M
210 M
200 M
190 M
180 M
170 M
400
300
200
100
0
80 M
100 M
120 M
140 M
160 M
180 M
200 M